

## The Habitat and Distribution of the Broad-leaf Spinulose Ferns

EDWARD H. CLARKSON

During the past five years the writer has had growing in his fern garden more than one hundred roots of the broad-leaf spinulose ferns, *Dryopteris dilatata* (Hoffm.) Gray and *Dryopteris dilatata* var. *americana* (Fisch.) Benedict. These plants came from various places considerable distances apart, as follows. Roots of *D. dilatata* were imported, under a special permit from the United States Government, from the estate of Mr. Alexander Cowan, Valleyfield, Penicuik, Midlothian, Scotland, where thousands of this beautiful fern grow luxuriantly at an altitude of about six hundred feet above sea level. Other plants of *D. dilatata* came from Mr. J. B. Flett, Seattle, Washington, where this fern grows plentifully at altitudes near sea-level and upward.

The roots of var. *americana* were from various places in Maine, New Hampshire, and Massachusetts.

### DISTRIBUTION AND HABITAT OF VAR. AMERICANA

Var. *americana* is found in the cold Canadian forest regions of eastern and northeastern North America from North Carolina to Labrador and Greenland. It seldom grows very much below or outside of these forest regions, and is occasionally found above the timber-line. In North Carolina it grows at an altitude of 4500 feet and even higher. As we follow north, we find it growing at lower and lower level until in southeastern Maine and northward it is found at sea-level.

The writer desires to call attention to a statement made in an article entitled "Problems in the Study of the Spinulose Ferns," by Dr. R. C. Benedict, AMER. FERN JOURN. Vol. 14, no. 3, 1924. "*Dilatata* is only one of an association of plants found regularly under alpine

conditions from the Alleghanies northward.”<sup>1</sup> This statement seems to the writer to be misleading.

“*Alpine*,” to most botanists, applies to such species as *Rhododendron lapponicum*, *Silene acaulis*, and such other plants as are really confined to the area above timber-line, or nearly so. Var. *americana*, even though it occasionally occurs above timber-line (so does the lady fern, for that matter) is mainly a plant of the Canadian forest region. Where that forest is high, as in much of New England and the Adirondacks, var. *americana* is high; where, as in southeastern Maine, the forest comes down to sea-level, var. *americana* comes down also.

DISTRIBUTION OF *D. DILATATA* (*LASTREA DILATATA*)

“*Lastrea dilatata* is a common and generally dispersed European species, occurring from Lapland and Norway to Portugal and Spain, the Savoy Alps, Italy, Croatia, and Transylvania. In Asia it occurs in Kamchatka, near Petropaulowski, and in Mingrelia: in Africa, in the Azores and in Bourbon. In America it occurs at Sitka and at Kodiak in Russian territory: at Port Mulgrave and in the Rocky Mountains: in New England<sup>2</sup> and Canada. There is also in the Hooker Herbarium, a specimen labelled New Zealand.” From Thomas Moore’s “Nature-printed British Ferns” (Vol. 2), London, 1863.

The writer desires to add the following. Examination of the specimens of *D. dilatata* in the United States National Herbarium indicates that this fern is widely distributed in southern Alaska. It is also found plentifully in western Canada and especially in British Columbia. In the United States it is found in Montana and Washington and south to California.

<sup>1</sup> “*Dilatata*” is here taken as including var. *americana*; so far as the region “from the Alleghanies northward” is concerned, the latter is meant.

<sup>2</sup> This refers to var. *americana*.

HABITAT OF *D. dilatata*

Because of the following statement from the pen of Dr. R. C. Benedict the writer has taken considerable pains to secure accurate and conclusive evidence regarding the habitat of *D. dilatata* both in Europe and in northwestern North America.

*The Statement.* “*Dilatata* and var. *americana* are alpine or arctic forms, i. e., they require a cold climate. In Labrador and Greenland it is cold enough at sea level, but further south in Europe and in America, *dilatata* finds suitable coolness only on mountains.” From “Fern Papers in Rhodora” (review), AM. FERN JOURN. Apr.—June, 1916.

*The Evidence.* Mr. Alexander Cowan, of Valleyfield, Penicuik, Midlothian, Scotland, wrote as follows:—“*Lastrea dilatata* grows in Scotland at all altitudes. I have thousands of it growing on my land here, six hundred feet altitude.”

The following letter from Dr. Christensen proves that this fern grows plentifully in Denmark and throughout the great German Plain. The altitude of nearly the whole of these two areas is five hundred feet or less.

Universitetets botaniske Museum  
Gothersgade 130. Kobenhavn K  
10 Januar, 1927

MR. EDWARD H. CLARKSON,  
NEWBURYPORT.

Dear Sir:—

As to the distribution of *D. dilatata* in N. Europe I can say the following. It is in woods in Denmark a common species, also occurring frequently in bogs, but there in a special form with recurved edges and black spores. It is here certainly more common than *D. spinulosa*. Denmark being a part of the Baltic or North German Plain it is no wonder, therefore, that *D. dilatata* is common in the whole area just as in Denmark, the sandy heaths, of course, excepted. In P. Ascherson u. P. Graebner: Flora des

Nordostdeutschen Flachlandes, 1898, p. 9 (the area just mentioned by you), we learn of the collective species *Aspidium spinulosum*: "Schattige und lichte Wälder und Gebüsche, durch das Gebiet meist *gemein*" (shady and open woods and thickets, common in most parts of our area) and on the subspecies *A. dilatatum* "so weniger häufig (als *eu-spinulosum*), gern an schattigen Abhängen" (somewhat less common than *eu-spinulosum*, preferring shaded hillsides.)

It is certainly common in all woods and naming localities is of no importance.

Yours truly,

[Signed] CARL CHRISTENSEN

Dr. Christensen also wrote as follows: "I note that we in Denmark have no mountains, the most elevated hill being 170 m. only" (less than 600 feet.)

Professor Frederic K. Butters, who has given considerable attention to the study of *Dryopteris dilatata* in northwestern America, wrote as follows:—"It is common from sea-level up to four thousand to five thousand feet. I have seen and collected it at sea-level at Vancouver Island and also around Glacier, B. C., in the Selkirk Mountains, where it is very abundant at altitudes of over four thousand feet. Timber line is about seven thousand feet and, so far as I recollect, *dilatata* never gets anywhere near that altitude."

Mr. Paul C. Standley, in an article entitled "Ferns of Glacier National Park" (Montana), AM. FERN. JOURN. Oct.-Dec., 1920, reported *Dryopteris dilatata* on the mountains there at an altitude of 3170 feet on the west and 4800 feet on the east slope and further speaks of it as common at *middle altitudes*, especially on the west slope.

Mrs. Carlotta C. Hall, of Berkeley, California, writes "It is wonderfully fine in the Redwoods, where it is very damp, at about 50 to 100 feet altitude." Mr. J. B. Flett, of Seattle, Washington, who has an expert knowl-

edge of this fern, having studied it for many years, writes that "it is quite common in rich woods near sea-level, not extending very high in the mountains."

The above evidence, which is furnished by well known fern experts, proves conclusively that *Dryopteris dilatata* does *not* require a cold climate. On the contrary, it proves that in the British Isles, in Denmark and in the vast North German Plain, as well as in British Columbia and the State of Washington, this fern is found plentifully at sea-level, as well as in the mountains. These places are regions of relatively warm winters and cool summers. Like our *D. intermedia*, it flourishes in warm as well as cool temperatures.

The writer could find no evidence that *D. dilatata* is found above timber-line.

NEWBURYPORT, MASS.

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### Recent Fern Literature

It is not often that the JOURNAL uses reprinted matter; but the article which follows, by a recent member of the Society, gives so excellent a history of the beginnings of an enthusiasm for ferns, so admirably put (as well as an account of a new and interesting fern book by another member), that we would break a rule or two, if necessary, to place it before our readers. For the privilege of doing so, we are indebted to the kindness of the author and the courtesy of the *Providence Journal*, in whose columns it originally appeared, June 9, 1928.

#### CONCERNING FERNS

FIELD BOOK OF COMMON FERNS. By Herbert Durand. New York: G. P. Putnam's Sons. 16mo. Illst. \$2.50.

It is remarkable how many different ways there are of getting your hands dirty in this complex world. Babies